

Abstract

Process for depositing layers of zirconium oxide using soluble powders

A sol-gel process for producing layers of zirconium oxide is described which comprises the following stages:

- (i) production of a soluble, zirconium-containing powder by:
 - (a) reaction of a zirconium alcoholate of the general formula $Zr(OR)_4$, in which the residues R are the same or different and represent straight-chain, branched or cyclic alkyl or alkenyl residues with 1 to 10 carbon atoms, which optionally exhibit one or more carbonyl and/or ester and/or carboxyl functions, with one or more polar compounds having complexing, chelating properties,
 - (b) heating the solution,
 - (c) mixing the solution with water, optionally in the presence of a catalyst,
 - (d) concentrating the solution until a powder is obtained,
- (ii) dissolving the powder forming a sol,
- (iii) coating a substrate with the sol, and
- (iv) annealing the coated substrate.